Bird Strike Monitor

Contract #: 500-97-010-05
Contractor: Pacific Gas and Electric (PG&E)
Contract Amount: $100,000
Contractor Project Manager: Sheila Byrne
Commission Contract Manager: Linda Spiegel

Project Description

The purpose of this project was to develop an efficient and cost-effective system to detect electric power-disrupting bird collisions with powerlines using a wire-trip mechanism. This system is designed to provide power line owners with the tools necessary to identify the power lines responsible for multiple bird collisions, without spending excessive time or money for unreliable or labor intensive reconnaissance. Once the power lines with high number of bird strikes are identified, powerline owners can then initiate mitigation strategies to reduce collisions. The Bird Strike Monitor can be used by all utilities and applicable regulatory agencies to identify and mitigate power lines responsible for multiple bird collisions.

In locations that receive high use by migratory waterfowl, collisions with power lines can result in high bird mortalities, which is in violation of the Migratory Bird Treaty Act. There are numerous documented cases where listed species, such as the bald eagle and sandhill crane, have been killed as a result of collisions with power lines. Although collisions are frequent, they are often difficult to detect or are in remote locations. Current methods used to identify lines responsible for killing birds and to determine actual numbers of bird mortalities are labor intensive and unreliable. It is cost-prohibitive to monitor the several thousand miles of power lines in the State and often birds that have been electrocuted are quickly removed by other wildlife before they can be detected. Furthermore, these bird collisions can cause expensive power outages or damage equipment. With the development of the Bird Strike Monitor, it may be possible to both decrease the number of bird-kills and power outages.

PIER Program Objectives and Anticipated Benefits for California

This project offers numerous benefits and meets the following PIER program objectives:

- **Improving environmental and public health costs/risk of California's electricity** by providing information to reduce bird mortality associated with powerline collisions.
- **Improving the reliability/quality of California's electricity** by reducing bird-related power outages.

Results

This project produced two major outcomes:

- The bird strike monitor as designed and tested did not produce consistently reliable data.
- Researchers were unable to correlate the number of bird strikes recorded by the monitor with dead birds or their remains. The primary reason for performance test problems was the drastically changed transmission environment.

The project demonstrated that the design of the bird strike monitor is no longer functional in areas with significant radio traffic in the 900 MHz range. To produce a bird strike monitor that will reliably record bird strikes, the current system will have to redesigned and incorporate a new radio and new software. The existing design can only be used in areas where radio site surveys have shown that interference would not create a problem.

Project researchers recommended that the following activities be undertaken to encourage further development of the system:

- Obtain recommendations from specialists in wireless data communication special applications on radio frequency bandwidth and technology for future radio selection.
- Depending on the radio chosen, develop software to take advantage of the technology's abilities to resist interference.
- Redesign the monitor's circuit board and modify the firmware. Include a waterproof housing that is designed to accommodate these new components.
- Upgrade the data collection method to make it Internet- and pager-capable.
- Additionally, developers could: (1) upgrade ground station hardware so that the ground station would automatically call the server to announce that a bird strike had occurred, so that researchers could recover a downed bird before the carcass was lost to predators; (2) change the monitor's trigger point short of burning in a ROM chip; and (3) clean up minor bugs in ground station software and the modem interface program.

The revised prototypes should be tested thoroughly in the laboratory and the field. PIER is continuing to fund follow-up research in this area.

Final Report

This project's final report is entitled, *Bird Strike Monitor* (600-00-027), and is available from the California Energy Commission website, at: www.energy.ca.gov/reports/2002-01-10_600-00-027.PDF. A later report, Bird Strike Indicator/Bird Activity Monitor and Field Assessment of Avian Fatalities (P500-03-107F), describes follow-on work to this project, and is available at: www.energy.ca.gov/reports/2004-03-05_500-03-107F.PDF.

Contact

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